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ABSTRACT

The use of systems analysis may help child developmental specialists improve the success rates of toilet training programs with developmentally disabled children. Such a systems analysis includes the sociocultural, family, and/or individual ecosystems of the individual. Two detailed case studies of mentally retarded elementary school age children illustrate systems concepts (morphogenesis, crises of transition, morphostasis, boundaries, enmeshment, and intervention). They also illustrate the importance of the socioculture, the family, and the individual as units of analysis and the application of such training procedures as overcorrection, positive practice, reinforcement, shaping, generalization, and maintenance. Contains 37 references. (DB)

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# Systems Analysis in Designing Toilet Training Procedures for Developmentally Disabled Persons

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Abstract

Often toilet training programs of disabled children will not be completely successful because they fail to include a consideration of family systems analyses. Systems analyses may include the sociocultural, family, and/or individual ecosystems involving a person with developmental disabilities. An improved understanding of the therapeutic properties of these systems may help child developmental specialists improve the success rates of toilet training programs. Systems analyses can guide practitioners in designing the most effective program to meet each individual need. Case studies are presented that elucidate the use of this strategy for self-help skill training.

# Systems Analyses in Designing Toilet Training Procedures for Developmentally Disabled Persons

## The Nature of Systems Analyses

The person who needs toileting skills can be thought of as living within several environments (e.g., sociocultural, political, and family). Each is interrelated and reciprocally influences the other. The essence of this environmental systems approach is conceptualized as "attention to organization, to the relationship between parts, to concentration on patterned rather than on linear relationships, and to consideration of (life) events in the context in which they are occurring rather than as isolation of events from their environmental context" (Steinglass, 1978, p. 304). Systems analyses focus on the characteristics of organization, which include wholeness, boundaries, growth, adaptation, differentiation, and hierarchical order (von Bertalanffy, 1968). This methodology is used extensively in family therapy models of treatment to provide holistic remediation of familial patterns of dysfunction of all types.

Often a developmentally disabled family member interrupts the family life cycle, thus causing problems (Haley, 1973). With the exception of Wolters (1978), therapeutic research focusing on the alleviation of individual and family problems generated by the presence of a family member with developmental disabilities using systems analyses is rare. This gap in the literature is surprising in light of our knowledge that no family member lives in isolation; each member is affected by the attitudes and behaviors of society and other family members.

Slowly, research and intervention in various of areas of developmental disabilities has been extended to include systems analyses approaches (Bradway, 1984; Pfeiffer & Tittler, 1983; Winton, 1986). Generally, the focus of such reports have been directed towards the theoretical reorientation of professional methods of assessment, goal setting, and programmatic implementation to include the thorough consideration of social environment effects on the function of the handicapped family member. Additionally, this approach has been applied to school-aged learning disabled populations (Abrams & Kaslow, 1977; Fish & Jain, 1985; Margolit, M. 1982; Pfeiffer, Gerber, & Reiff; 1985). Again the systems approach affords insight into family factors influencing the social adjustment of these students. Although long term interest in the relationship and interaction of the family containing a person with mental retardation exists (Farber, 1959; Grossman, 1972; Kramm, 1963), no attempts have been made to operationalize the theory in regards to pragmatic habilitation problems.

## A Case Study: Mark

A case example will introduce and clarify useful systems concepts. A male mentally retarded elementary school student was not toilet training. His family did not appear to be concerned about this skill deficiency, stating that the boy could not learn toileting skills, and resisting implementation of toilet training efforts in the home. Frustrated by the parents' apparent lack of concern, the teacher toilet trained the young boy at school within a short period of time. The impetus for changes thus originated solely from outside the family and was, therefore, resisted. This resistance may be

understood as a morphostatic response, a homeostatic mechanism of control that allows the family system to regulate its internal and external environment. The teacher failed to recognize that toilet training would entail morphogenesis; that is, it would require the family to change its basic structure, organization, goals, and values in order to remain viable (Buckley, 1967). The family was suddenly at a crisis of transition (Hill, 1972), precipitated by the school system.

The family refused to maintain this toilet training program at home and continued to keep the boy in diapers ( a morphostatic response). The teacher would remove the diaper when the boy arrived at school and the family would put a diaper on him when he returned home. This continued for several months with both family members and school personnel becoming increasingly frustrated and hostile. Indeed, the family's attempts to maintain homeostasis became part of the problem (Speer, 1970). It was only when attempts were made to understand the family system that the need for an incontinent child became apparent. An incontinent child was proof to the family that the mother needed to stay overly involved with her son because he was, and would always be, a helpless infant. If the son suddenly became toilet trained, the process of differentiating himself from his family of origin (Bowen, 1976) would begin. The family might then be forced to examine inappropriate boundaries.

Boundaries (Minuchin, 1974) permit and restrict exchanges between person and ensure the maintenance of appropriate hierarchies of behavior. A boundary between parents and children permits children access to parental areas involving time, attention, and affection but

the boundary restricts children's participation in spousal activities such as budgeting, sexual behavior, and so forth (Schvaneveldt & Ihinger, 1979). The clarity of boundaries is a major parameter in evaluating the health of a family system and has important ramifications for working with individual family members. Boundaries may become too diffuse (Minuchin, Rosman, & Baker, 1979), as happened with the family in this case.

Because the mother believed her son to be a helpless infant even though he was now in elementary school, the mother allowed him to sleep with her and her husband each night. This interfered with sexual activities between the parents and reflected the wife's overinvolvement with her son, which Minuchin (1974) described as enmeshment. The wife's emotional system was more focused on her son than on her husband. The husband was sensitive to the wife's anxiety and supported her emotional involvement with the son. Thus, both the wife and husband were invested in maintaining the status quo (morphostasis). The highly enmeshed boundaries made the family intolerant to change (morphogenesis) and they responded to the school's efforts to force change with excessive speed and intensity (morphostasis). Attempts to understand and work with the family system allowed the family to create clearer, more distinct boundaries between members. When boundaries were redefined through family therapy, the toilet training program became successful at home. The wife no longer viewed the boy as a helpless infant or allowed him to sleep with her and her husband. The husband discovered other ways to show support for his wife. This example illustrates that, when family social systems can grow (morphogenesis), they can be elaborated or

changed by outside input (Kantor & Lehr, 1975).

Wholeness is an integral part of using systems analyses. No individual lives in isolation from others and therefore a holistic approach is essential. The case example illustrates this point. The case consultation concerned a problem the teacher was experiencing with one student; but, if the family system had been ignored and focus had remained on that one student, it is doubtful that the situation could have been resolved.

Maintaining appropriate hierarchies in the family is also crucial in executing systems analyses. Siblings of mentally retarded children are often required to provide enormous amounts of care for their handicapped sibling. Community workers must be especially careful in developing intervention programs so that siblings are not placed in inappropriate positions in the family hierarchy, such as the 'parental child'. For example, one mother, who was a single parent and worked at night, requested that her mentally retarded daughter be trained in night-time toileting skills so that she would no longer wet her bed. Training was accomplished in a couple of nights. However, the maintenance of the program was unsuccessful because the responsibility rested with an older daughter. She was too young for such responsibility and unable to maintain the training program. The dangers of placing children in positions that require more domestic responsibility than is usual include psychiatric difficulties (Gath, 1974); decreases in sibling cohesion, affectional expression, and family consensus (Howard, 1978); and the quality of later parent-spouse interactions (Tolman, 1959). This example highlights the need to plan toilet training programs that are consistent with the family

system.

The goals of the intervention strategy must be consistent with the individual's abilities and environmental system in which he functions. Attempts to understand the nature of the social system should occur during the assessment phase prior to training. To determine a specific intervention strategy requires an understanding of and an appreciation for the many possible approaches that are available. Practically every toilet training strategy has some success for some individuals. Hence, for a strategy to be chosen it must be the most appropriate for that one individual living in her/her unique social system. Attempts to understand the nature of the system should occur prior to training. Even determining a realistic level of developmental readiness is problematic. Is the person physically able to control bladder or bowels? Often trainers declare than an individual lacks behavioral or physiological prerequisites only after toilet training has failed. Bettison (1979) provides guidelines for developing toilet training programs that are consistent with individual's developmental stage of readiness. Another important, but often overlooked source of program failure is the omission of sufficient analysis of the social factors affecting the success of the program.

The following case example will be described in detail for the purpose of demonstrating systems analyses and its use in enhancing the development and selection of effective toilet training procedures.

## Case Study #2: Lisa

Lisa was a ten year old, multihandicapped, mentally retarded

female. She was nonambulatory, had no dressing skills, had poor eyesight and cerebral palsy, was unable to feed herself with a spoon, and required daily medication to control seizure activity. Lisa had a one word vocabulary ("Hi") and little receptive language. She lived with her family and wore diapers all day and night. All previous efforts to toilet train her had been unsuccessful.

Socioculture as Unit of Analyses

Families are embedded in a sociocultural context. The family system influences and is influenced by other social systems (Woods, 1959). "One begins to realize that the family constitutes only one level of a formal and informal hierarchical network of kinship systems, small groups and organizations which make up the larger rural community system" (Bagarozzi, 1982, p. 57). Southern rural Appalachian families often reflect the unique culture in which they live. Remote areas, often separated by mountains, cause traits such as independence and self-sufficiency to be highly valued. Scarcity of services, poor education, and social isolation are prevalent.

Lisa was refused entry into the school system at one point in time because she was not toilet trained. The school system had few resources and its remoteness caused only a slow movement towards upgraded services. Lisa's family, reflecting their society's values, refused to make request for services that she was legally entitled to receive.

Family as Unit of Analysis

Systems analyses entail a comprehensive assessment and treatment plan that includes the family itself as an interacting system (Halperin, 1982). Lisa's family was headed by a single parent and she

had five siblings, two sisters and three brothers. Her oldest sister had been placed into a parental role, a factor noticed previously to contribute to familial dysfunction. In addition, one family rule was that only females in the family would provide care for Lisa. This greatly restricted the resources for care available within the family unit. The rule also reflected the impact of culture on the family - males were not supposed to be nurturing (Balswick & Peck, 1971). Efforts to alter this family rule (morphogenesis) were rigorously and systematically resisted by family members (morphostasis), reflecting their lack of adaptability. Haley (1976) posits that this morphostatis response is predictable as the family members already know where the problems exist. Russell and Olson (1983) might describe the family as rigid, that is, its ability to change its power structure, role relationships, and relationship rules in responses to situational and developmental stress was restricted. All family members agreed that, if older brothers would assume some of the care Lisa required, stress on Lisa's mother and oldest sister could be alleviated; yet all family members resisted such changes.

Lisa's family held an important family myth (Bagarozzi & Anderson, 1982), which was that Lisa could not learn self-help skills. The result was a family atmosphere of despair and hopelessness. Further, the impact of Lisa's incontinence was severe. Siblings were ashamed to bring friends into the home because of fear of embarrassment as the home continually smelled of urine. This made the family's isolation more pronounced.

Individual as Unit of Analysis

Lisa's mother worked nights and slept days, leaving her oldest

daughter in charge. However this child could not control her older brothers. In addition, Lisa's mother was not assertive, which increased the family's chaotic atmosphere. Lisa's mother resisted (morphostasis) encouragements to have Lisa placed into school by force of law. She felt clearly overwhelmed by her family and had few resources. Hence supportive therapy was indicated.

Lisa attended a ten day, residential, self help skills training camp, which has been previously described (Brooking, 1979). The camp provided an opportunity for highly structure and consistent training in self-initiated toileting. Lisa received a thorough physical examination prior to training to verify bladder and bowel control. An intensive training program was chosen because both family members and professionals had failed to train her while living in her home. Lisa's training procedures adapted three component outlined by Foxx and Azrin (1973).

Training Procedures

Foxx and Azrin introduced the concept of overcorrection, a two part procedure consisting of cleanliness training and positive practice. The cleanliness training was eliminated since Lisa was not physically capable of independently cleaning up a toileting accident. The physical guidance needed from the trainers proved to be reinforcing to her and thus negated the purpose of cleanliness training.

Positive practice was retained. During positive practice, Lisa was required to practice the acceptable alternative to having a toileting accident. However, the number of positive practices remained flexible and depended largely upon Lisa's reactions. No more

than six positive practices were given for each toileting accident. Training was postponed in cases of extreme emotional response. All procedures were carefully designed to minimize emotional responses. Maintaining a high level of flexibility during the training was considered to be one of the procedure's strengths and not a weakness.

One asset Lisa possessed was her sensitivity to social approval and disapproval. Therefore, the social implications of her toileting behavior were emphasized. Trainer interaction with her was intense during periods when she was not on the toilet or had recently had a toileting accident. Toileting accidents resulted in positive practice and a seven minute time-out period sitting on the toilet. Lisa received no social reinforcement while sitting on the toilet. When voiding occurred, she received both primary and secondary reinforcement and in addition the intense social interaction with the trainer.

The social deprivation procedures were also flexible. When Lisa was placed on the toilet and left alone in the bathroom for the first time, she had an extreme emotional response. A more gradual procedures was then employed. The amount of time she was required to sit on the toilet was gradually increased. The trainer more slowly exited from the bathroom. The trainer would initially sit in a chair close to her while she was on the toilet. During each successive toileting the trainer would move further away from her. Eventually she was able to sit on the toilet alone with no emotional distress evident.

Shaping procedures were also used to teach her that the desired response was elimination in the toilet. During the initial phase of

the bladder training sequence, she would periodically have a toileting accident and subsequently void in the toilet during positive practice or the seven minute social isolation period. Reinforcement for voiding would following, and intense social interaction resume. However, once she began to demonstrate an understanding that voiding was to occur in the toilet, reinforcement was given only if voiding occurred during her regularly scheduled period on the toilet or for self-initiations.

During the period that Lisa was off the toilet, she remained undressed below the waist. If she started to have a toileting accident, the trainer would grab her hands and place them so that she could feel the urine exit her body. In a sharp voice the trainer would tell her that it was bad to be wet. This procedure facilitated the discrimination between 'wet' and 'dry', between unacceptable and acceptable behavior.

Clinical Response

During Lisa's first day of training, she had four toileting accidents, which was consistent with her baseline performance. That evening, using a successive approximations model, Lisa was taught to say "Pee". "Pee" became the cue for having someone take her to the toilet, thus making self-initiated toileting possible. During her second day of training, she had

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Insert Figure 1 about here

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twelve accidents and self-initiated once (see Fig. 1). During her

third day of training, she had six accidents and self-initiated a total of twenty times. Lisa self-initiated 15 times during a two and a half hour period on her fourth day. This high rate of occurrence may be explained by four factors: increased fluids, a continuous reinforcement schedule, deprivation due to meal being used as reinforcers, and the learner's enthusiasm at having learned a new behavior. Smith (1979) reports similar findings. On the fifth day, two accidents and four self-initiated trips occurred; on the sixth, there were two accidents and six self-initiations. No accident occurred on the seventh day and self-initiated trips occurred eight times. On the eighth day Lisa had two accidents and self-initiated four times.

Generalization to the Home Environment

Typically, Lisa appeared to be unable to generalize her new toileting skill readily from the camp environment to other environments. She had to be continually reminded through the use of dry pants inspections and overcorrection that she was expected to remain continent regardless of the change in environment. For example, during her fifth and sixth days of training she had no toileting accidents until she left camp to go swimming at a local university. Each day after this time she had two accidents. Following camp Lisa would remain continent all week while living in her home. However, on Sunday, when the family went to church, she was taken to another home for a few hours. She would consistently have a toileting accident during this period. No overcorrection procedures followed the accidents in this environment. These accidents, therefore, continued because the expectation level for Lisa was not

sufficient in this new environment and reinforcement was inconsistent.

Maintenance problems were anticipated as a result of the system analyses. Lisa's family had difficulty changing their expectation. She had proven that she could learn, which forced a major attitude change among family members (morphogenesis). However this was resisted to a certain extent (morphostasis). The family climate, however, did improve. Lisa no longer had to wear diapers; her home no longer smelled of urine; and her siblings felt able to bring friends into the home. Her mother became more assertive and Lisa entered school in the Fall.

During a one and a half year followup period Lisa averaged less than one toileting accident a day and self-initiated toileting behavior approximately four times daily. Note that the frequency of her voiding remained constant prior to and following training: prior to training she had four toileting accidents daily, following training she self-initiated four times daily. The long term maintenance of a relatively low accident rate and high self-initiation provides the inference that a slow but consistent acceptance of Lisa's skill improvement was occuring within the family unit and that the improvement of the quality of life for all family members was at least partially reinforcing this change.

## Conclusion

An intensive training procedure was chosen to toilet train Lisa because that was appropriate for her unique living system. Lisa's family members had failed to train her in her home even with the help of professionals. The family myth that Lisa could not learn made chances for a successful training program in her home doubtful. In

addition, the school system refused to admit Lisa until she was toilet trained, which precluded training her as a part of her school program. Therefore, when the skill training camp became available, an intensive, consistent toilet training procedures was chose. A modified version of the Foxx and Azrin program was used with changes made on the basis of clinical impressions.

Other procedures might be equally appropriate for other individuals. Thorough systems analyses will enable practitioners to individualize the prescription of successful toilet training programs. Less intensive procedures are often more appropriate for use in home and school environments and can be implemented without disrupting daily activities or causing traumatic emotional responses in learners or trainers.

Finally, in understanding the issues of transfer and generalization of learning, social system components of order (morphostasis) and change (morphogenesis) are crucial in the determination of the family's capacity to accept and maintain skill changes in an individual family member. A balance between morphostasis and morphogenesis is necessary to stability and change within the overall family system. Thus for individual therapy to attain maximum effectiveness, it appears vital that practitioners understand and assess the family structure and learn to recommend programming that will be effective within the family's living system in terms of implementation and maintenance of skill acquisition.

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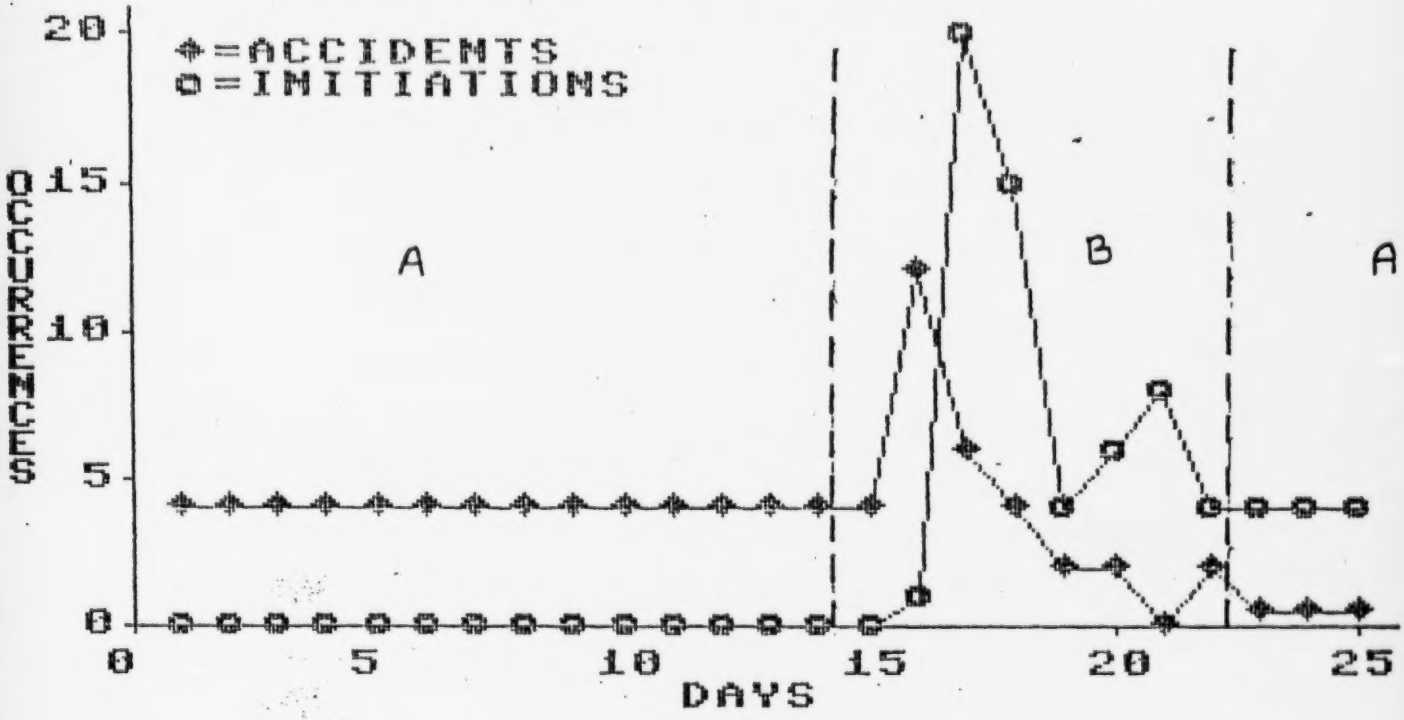


NOTE:
A= DAYS 1 - 14 ESTABLISHING BASELINE
B= DAYS 15 - 22 TRAINING DAYS
A= DAYS 23 - 25 FOLLOW-UP 1.5 YEARS LATER

FIGURE 1: CASE STUDY # 2 -- CLINICAL RESPONSE TO TREATMENT